Effects of Fire on Raw Water Quality

Confluence of South Platte River (left) & Horse Creek after Hayman Fire

When a wildfire burns vegetation that secures the soil, runoff rates may increase, potentially bringing a surge in sediments and debris to streams and reservoirs that can result in numerous water quality concerns:

- Low dissolved oxygen (DO)
- Fish kills and other ecological changes
- Increased turbidity, suspended solids, and conductivity
- Increased total organic carbon (TOC)
- Increased ammonia from fire retardants
- Clogged intakes and increased sludge handling
- Elevated phosphorus, iron, manganese, and nitrate levels
- Unpleasant taste and odor
- Changes in pH and alkalinity

What can you do at your water treatment facility?

- Build detention ponds to mitigate some of these issues by allowing solids to settle before entering the plant.
- Keep intakes clear of sticks, logs, and other debris.
- Monitor filters and increase backwashing, as necessary.
- Plan for increased maintenance and operator workload.
- Identify possible alternate water supplies, or maximize finished water storage prior to an anticipated poor water quality event.
- Monitor raw water frequently, and perform jar testing to predict treatment needs.
- Keep necessary chemicals on hand, and be prepared to tweak the dosage within accepted operating parameters.
- If in doubt, check with your drinking water regulatory agency.

Stay on Top of the Situation

Create a Maintenance Plan

- Identify and schedule seasonal tasks
- Review and update the plan as operations at your utility change

Conduct Drills for your Staff

- Test your contact lists every six months to ensure accuracy of information
- Make sure all staff understand where to find information and help during a wildfire emergency.

Sentinel Mountain Fire, Missoula, MT

Monitor Conditions

Montana Fire/Drought information
http://mt.gov/fire.asp
http://www.drought.unl.edu/dm/monitor.html
Northern Rockies Coordination Center
http://gacc.nifc.gov/nrcc/index.htm
NOAA Fire Weather Zones
http://www.wrh.noaa.gov/firewx/?wfo=mso

More Information

DNRC Forestry Division – Fire and Aviation Bureau
http://www.dnrc.mt.gov/forestry/Fire/default.asp
Fire Safe Montana
http://www.firesafemt.org/
Wildland Fire Assessment System
http://www.wfas.net/

Montana Department of Environmental Quality
Public Water Supply Program • P.O. Box 200901 Helena, MT 59620-0901 • 406-444-4400
http://www.deq.mt.gov/wqinfo/pws/securitylinks.mcpx

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Fire Management Planning for Water/Wastewater Systems

Neva Fire, Plant at Left Hand Canyon

Is your system ready for a major wildfire?

Montana's forests are struggling with drought conditions and/or have been devastated by the pine beetle, making conditions perfect for large-scale wildfires throughout Montana.

Montana Department of Environmental Quality

Acknowledgements:
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Create a Fire Management Plan for Your Water System

Use the steps outlined below to identify and prioritize hazards, develop and implement an action plan to mitigate fire hazards, and create an annual maintenance schedule to ensure your water system and watershed drainage is as fire safe as you can make it.

- Talk to your local fire officials
- Create a defensible zone
- Identify vulnerabilities
- Remove fuels
- Reduce structure ignitability

Defensible Zone Around Plant at Left Hand Canyon After Neva Fire

Talk to your local fire officials and forestry/ land management agencies

Ask them for suggestions about state and local fire codes and work to develop partnerships with them.

- Team up to identify hazards at your site.
- Discuss the ways you can help them protect your utility, such as creating fire breaks and maintaining fire roads.
- Pool your resources by setting up or joining a community wildfire protection planning group.
- Engage in exercises simulating fires that impact watersheds and facilities.

Create a defensible zone

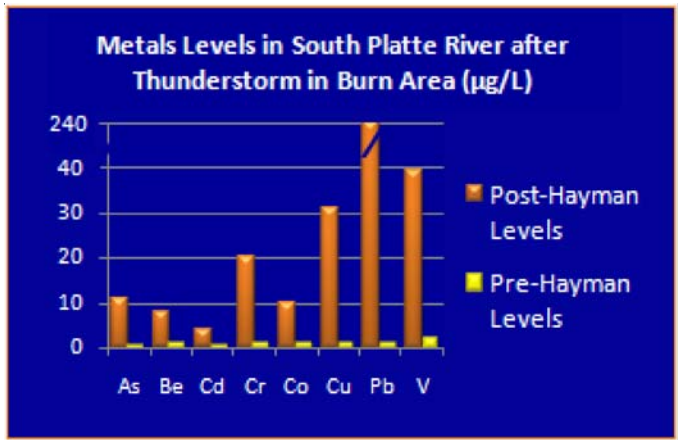
Consider the effects natural and man-made features have on the spread of fire.

- Ridges can retard the speed at which a fire advances.
- Canyons and steep slopes can easily double the rate of spread.
- Fire breaks and fire roads create a buffer zone and provide a vantage point for fighting fires.

Identify Vulnerabilities

Think about facility components that can be damaged by wildfire.

- Protect your power. Remote control of system components, such as tanks, may be disabled if fire takes out power to those components.
- Protect your pump and well houses, wellheads, chemicals, and chlorinators.
- Help firefighters protect your assets by using GIS to map remote components. Keep a copy of the map in a secure offsite location.
- Understand the effects fire can have on raw water quality and the water treatment processes.



Pine Beetle Kill, Berthoud Pass

Remove Fuels

Fuels can consist of vegetation, chemicals, and many other materials such as oily rags, trash, cardboard boxes, and wooden pallets.

- Prescribed burns can effectively remove understory fuel and be a great fire mitigation tool. Conduct prescribed burns under the direction of a fire manager.
- Remove tree branches within six feet of the ground.
- Store fuels a safe distance from structures.
- Ask the local power utility to trim tree branches near power lines.
- Thin out continuous tree and brush cover around structures. All flammable vegetation should be removed within 15 feet of a structure.

Reduce Structure Ignitability

Fires can take hold quickly. Making structures less ignitable is an important part of a fire management plan.

- Trim tree branches overhanging a roof.
- Keep gutters clear of leaves and debris. Inspect at least twice yearly.
- For new construction, repairs, or remodels, use fire-resistant roofing and building materials.